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CORN

With A Future!

Funks Hybrid



FUNK BROS. SEED CO.

BLOOMINGTON, ILLINOIS

FUNKS HYBRID CORN IS KING

Corn is King and even though the price foundation of the corn empire rises and falls the throne of high yield per acre is economically sound and will continue to be the reigning monarch of all corn producers. We firmly believe that Funks Hybrid corn is the best means at the disposal of the corn producer today in attaining higher acre yield. Hybrid corn has very definitely passed the trial or experimental stage. Hybrids are available for the corn producer of most all localities. The thinking, forward-looking farmers are going to be quick to grasp the opportunity of producing more bushels per unit of area, thereby increasing their income due to lower production cost.

Open-pollinated corn is made up of a variety of types. This is why it is possible to vary the type, maturity, height of ear and other characteristics within certain limits by selection. This is also a reason why corn is such an interesting crop with which to work.

Each kernel of corn is the result of the fertilization of an egg at the base of the silk by a sperm which is carried by the pollen. The stalk bearing the ear is the female parent and the one supplying the pollen (tassel) is the male parent. It is readily seen that a kernel of corn may have the same plant for both parents or may have different plants for each parent.

CORN A MIXED POPULATION

In the corn field pollen is carried from the tassel by air currents and wind. It floats through the air and may come into contact with a receptive silk. This, in addition to the fact that a single corn plant does not always silk and tassel at the same time, is why it is more generally the case that a foreign plant supplies pollen for the kernels on a particular ear. It would be possible for each of the thousand or more kernels on an ear of corn to have a different male parent.

Selecting a seed ear from a good plant is, therefore, a process of judging only the female parent. The pollen or male parent may represent various other plants, some good, some fair and some decidedly inferior. While it is possible to make improvement in corn by selection alone it is manifestly impossible to make the greatest grain. In any breeding program (plant or animal) rapid and permanent improvement results only when both parents may be judged and evaluated.

The Pure Line Method of Corn Improvement makes possible the accurate evaluating of both female and male parent because, instead of promiscuous, random pollination, very carefully controlled pollination is practiced with both parents definitely known.



Men Detasselling Corn on Funk Farms. All tassels are removed from female parent or seed producing rows before any pollen is shed. Another strain in field supplies pollen. Seed is taken only from detasselled rows.

INBREEDING FOR PURE TYPES

In putting this method into operation it is first necessary to purify into stable, pure strains some of the corn from the regular varieties. This is accomplished by control pollinating so that the same plant is both female and male parent. As the small ear shows up on the selected plant a small bag is placed over it before any silks emerge. When the tassel of this plant ripens and sheds pollen some of the pollen is collected in a larger bag. The small bag is lifted off the ear, and, at the same instant the larger bag is slipped over the ear and the pollen dusted on the silks. The larger bag is slipped into place over the ear to protect it from foreign pollen.

The process just described, fertilizing the silks of an ear with pollen from the tassel of the same plant, is known as self-fertilization or inbreeding. The next spring, when such inbred ears are planted in ear rows, a large number of weaknesses show up, such as dwarf plants, plants with rolled leaves, individuals with weak roots and weak stalks, leaves of pale color or lacking in green material, plants which are smutted or otherwise diseased and plants having various desirable and undesirable characteristics too numerous to list here. Year after year inbred seed ears are harvested from the better plants—planted in ear rows—again self-fertilized and the better plants selected. After five to eight years of such inbreeding and selection uniform appearing types are developed which are known as inbred strains or pure lines.

Inbred strains are not suitable for the corn producer since they yield only one-half to one-third as much as the varieties from which they were started. Keep this in mind.

CROSSING INBRED STRAINS

When two of these inbred strains are crossed, however, the yield lost on inbreeding is usually regained. Not all such crosses are satisfactory. The only way known of evaluating them is to grow such crosses in performance plots for comparison with each other and with standard varieties using yield, quality, lodging, etc., as a basis for judgment. Recombinations of two inbred strains are known as Single Crosses, and, while they would be suitable for commercial production, the practice is not generally used due to high production costs brought about by low yield of inbred mother parents and difficulty in producing sufficient inbred seed for large field plantings.

For commercial hybrid seed two single crosses, with no common parent, are combined to produce what is known as double cross seed. Here again the crosses must be grown and compared in order to evaluate their fitness for actual farm use. We emphasize again that not all recombinations of inbred strains are high yielding and desirable in other respects.



Detasselled Hybrid Seed Field on The Funk Farms. The two detasselled rows are the Hybrid seed producers and are the only rows from which seed is harvested. No seed is saved from the single row (male parent) with tassels.

Experimentally, crosses between inbred strains and single crosses are produced by the same method used in self-fertilization or inbreeding except that pollen is taken from a selected unrelated strain instead of being taken from the same plant.

DETASSELLING CORN

Quantity production of hybrid corn necessitates use of other means of control pollination. In order to increase supply of seed of inbred strains they are grown in isolation plots. These plots are located at distances of one-fourth mile or more from other corn. Since inbred strains are genetically pure, inter-pollination between the plants produces pure line seed instead of hybrid seed.

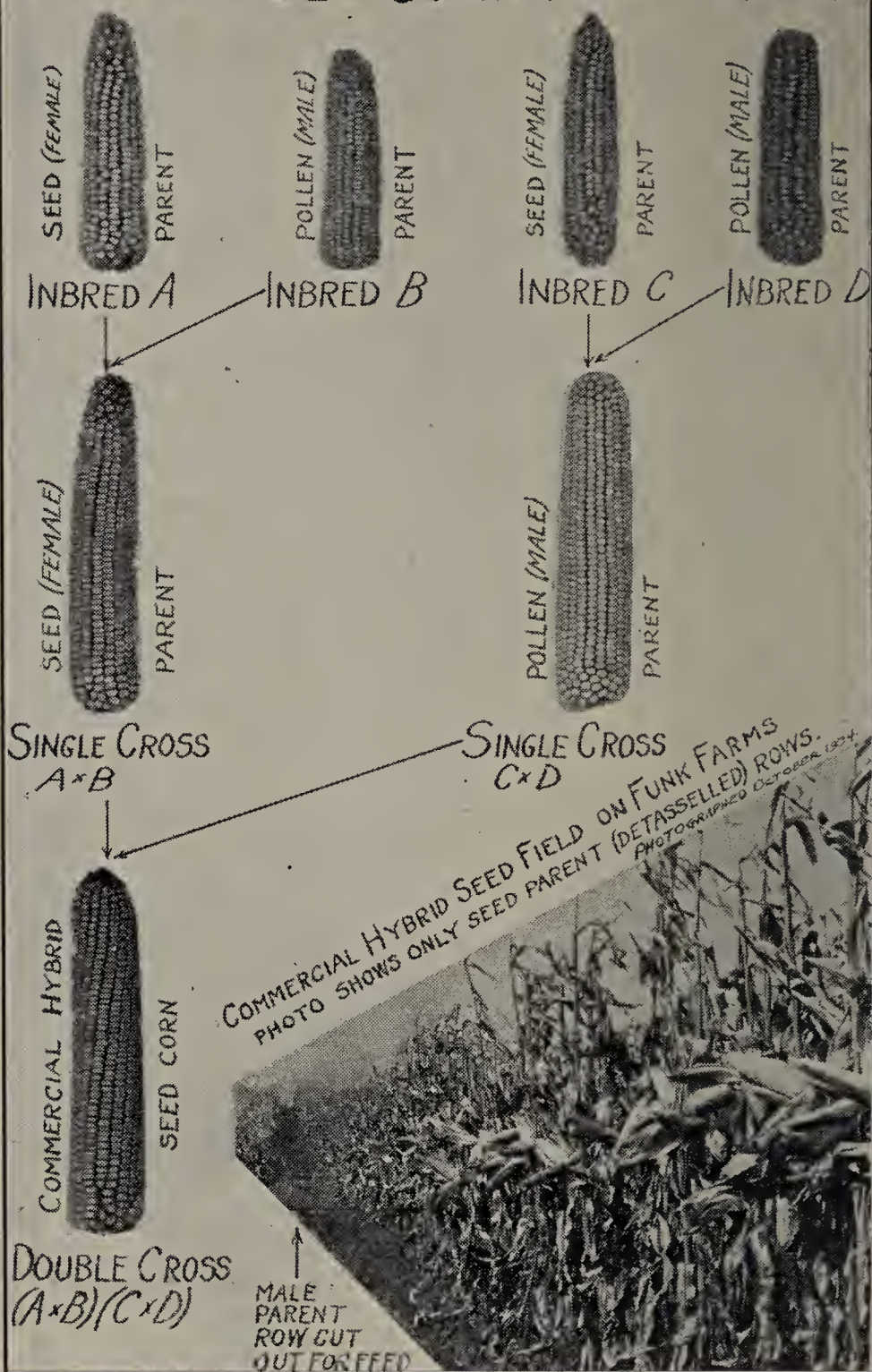
Single crosses are produced in quantity by planting unrelated inbred strains in alternate rows in isolation plots described above. Tassels of these unrelated strains are pulled out before any pollen is shed. This detasselling leaves only the one source of pollen, the tassel-bearing inbred strain being the male or pollen parent of all the corn in the plot. Therefore, the detasselled rows furnish single cross seed while the rows with tassels furnish pure line seed.

SUMMARY: YIELD OF FUNKS HYBRID CORN COMPARED TO OPEN POLLINATED VARIETIES ON 84 FARMS IN 1933 AND 124 FARMS IN 1934

	Kind of Corn	YIELD CLASSES Bushels per Acre										Average Yield Bu. per Acre	Increase in yield in favor of Funks Hybrid
		15 to 24 bu.	25 to 34 bu.	35 to 44 bu.	45 to 54 bu.	55 to 64 bu.	65 to 74 bu.	75 to 84 bu.	85 to 94 bu.	95 to 104 bu.	105 to 114 bu.		
SEASON OF 1933	Funks Hybrid Corn.....		5	14	12	8	18	17	4	5	1	63.7	8.3
	Open Pollinated Varieties.....	3	7	17	14	18	10	7	7	1		55.4	
SEASON OF 1934	Funks Hybrid Corn.....	6	14	18	34	26	15	6	4	1		51.3	12.5
	Open Pollinated Varieties.....	25	24	37	14	13	9	2				38.8	

NOTE: Funks Hybrid Corn yielded only 12 bushels (Average) less in 1934 than in 1933 while the Open Pollinated Varieties yielded 16 bushels less in 1934. It has been our observation in the past that Funks Hybrid Corn gives a better account of itself in unfavorable seasons than do the Open Pollinated Varieties. We refer you to the Agronomy Department of the University of Illinois for results of the Illinois Performance Tests in 1934.

DIAGRAM SHOWING HOW FUNKS HYBRID SEED CORN IS PRODUCED



Funks Hybrid corn is the result of years of careful selection, years of scientific breeding and years of trial and comparison in performance plots. Control pollination is practiced in every operation. Funks Hybrid is true Hybrid corn.

PRODUCING DOUBLE CROSSES

Double crosses are similarly produced on a large scale by planting two unrelated single crosses in a field. Pollination is controlled by removing tassels from all plants of one strain before pollen is shed. Double cross seed is harvested from the detasselled plants, the self-pollinated single cross used for the male parent being discarded. In order to have a high proportion of the land in seed producing corn, one row of pollen parent is grown for each two or three rows of female parents, seed being produced on two-thirds or three-fourths of the land as the case may be.



Each Fall Hundreds of Corn Producers Visit the Plots on the Funk Farms To Learn of the Latest Developments in Corn Improvement. Mr. Funk Addressing the Group.

SEED FROM HYBRID UNSATISFACTORY

The question often arises as to the suitability of seed from Hybrid corn for seed. Recall the fact that inbred strains yield only one-half to one-third as much as regular varieties. Hybrid corn is the result of crossing inbred strains with control pollination in every operation. Seed selected from Hybrid corn does not yield as much as the original Hybrid, the yield reverting to a point near the average of the varieties from which the inbred strains were selected. This reduction in yield has been estimated by various investigators at from 15% to 25% the first year seed is selected from the Hybrid.

DESIRABLE QUALITIES OTHER THAN YIELD

High yield has not been the only object of the corn breeding program on the Funk Farms. Root systems, stalk strength, cold resistance, disease resistance and drought qualities have all come in for their share of study and selection. Resistance to the attacks of certain insects, such as chinch bugs, has also been observed, some hybrids showing up exceedingly well in this respect.

FUNKS HYBRID CORN IS GOOD

In conclusion, let us say that we have every confidence in Funks Hybrid corn. We know it is good. We know it will make good under average conditions of fertility and good farming. As we stated before, Hybrid corn is past the experimental stage. It is ready for the practical corn grower. We are confident, that with Hybrid corn, he can increase his yield and lower his cost of production, thereby making corn growing a more profitable part of his business.

ILLINOIS SEED LAW DEFINES HYBRID SEED CORN

"Hybrid seed corn, as the term is now commonly used, signifies seed resulting from cross fertilization involving inbred lines of corn or (and) their combinations; the inbred lines having been self-fertilized until they are reasonably pure."

—*Illinois Seed and Weed Control Laws, Bulletin 330, Page 6.*

Funks Hybrid conforms with the Illinois law. In addition Funks Hybrid has been tested for performance in different localities over several seasons. See table inside.

For further details, prices and Hybrid recommended for your locality, etc., write to

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